ANNALS OF SURGERY.

MALIGNANT TUMORS OF THE NASAL FOSSÆ, WITH FIVE ILLUSTRATIVE CASES.

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THE malignant tumors of the nasal fossæ have received very little attention from the surgeon, and, even by specialists the subject has not been studied with sufficient care. This neglect is probably due to the great rarity of the class of diseases now under consideration. A very few surgical writers of ancient times recognized the existence of malignant disease in the nasal passages, and they described many of the cases as cancer, which, according to our present histological classification, would be placed amongst the sarcomata, Indeed, carcinomatous disease appears to be extremely rare in this region of the body, and the sarcomata are only a little more common.

The five cases now recorded are therefore of some interest, and may form a text for some general observations regarding the diagnosis and treatment of malignant disease of the nasal passages:

The first case is that of a man suffering from an adenocarcinoma, originating in the left inferior turbinated body, causing complete obstruction to nasal respiration, but little or no pain, and only occasional slight hæmorrhages; operation performed 13 months after the onset of the disease, but unsuccessful, on account of the extent of the growth; recurrence within a few weeks, and death three months thereafter.

The second case is that of a man suffering from a myxocar-

cinoma of the right middle turbinated body, which caused complete occlusion of the right nostril; growth highly vascular, and bleeds freely on slight injury, but no pain to speak of at any time. Operation successfully performed 10 months after onset of the disease. No recurrence within 7 months.

The third case is that of a man who suffered from a round-celled sarcoma of the middle and superior turbinated bodies on the left side, associated with severe pain; repeated and sometimes very profuse hæmorrhages, occasionally checked by treatment. Removal of growth impossible; great general prostration; hæmorrhages, anæmia, displacement and protrusion of eyeball; somnolence, death from coma, 16 months after onset of disease.

The fourth case is one of round-celled sarcoma of the left middle turbinated body. Symptoms at first those of simple mucous polypus, followed by repeated severe hæmorrhages with obstruction to nares, and ultimately, by sudden development of cerebral symptoms, ending, in a month, by death from coma, 16 months after apparent onset of the disease.

Case five is that of a middle-aged woman, who suffered from round-celled sarcoma of the nasal septum, during seven or eight weeks; sudden formation and rapid growth; complete obstruction to right nares; occasional pain; hæmorrhage on injury; deformity of face; complete removal. Cure; no recurrence 8 months after operation.

From the above brief summary the general character of the cases about to be described will be seen, and the more prominent features of the disease are brought into notice. Before making any further remarks regarding the subject of malignant tumors of the nasal fossæ, it will be well to enquire more in detail regarding the individual cases.

The following is the history of the five cases which have been observed.

CASE I. *Adeno-carcinoma of left inferior turbinated body. Complete nasal obstruction. Little pain and slight hæmorrhage. Operation unsuccessful. Recurrence. Death in three months thereafter.*—J. M., æt. 47, chrome worker, was admitted into the Glasgow Infirmary November 16, 1889, complaining of inability to breathe through the

left nostril; and also of a swelling on the left side of the nose externally. About 20 years ago the septum of his nose became perforated; this he attributes to the action of the irritating chemical substances amongst which he works, and he says that many of his fellow workmen are similarly affected. On examination, a large rounded perforation is seen in the nasal septum, large enough to allow a shilling to pass from one nostril to the other. The margins of the perforation are smooth, completely cicatrized, pale in color and free from ulceration. The anterior margin of the perforation is situated about half an inch from the tip of the nose. In the month of May (1889) the patient began to notice an obstruction in his left nostril, preventing him from breathing through it, and giving the sensation of the presence of a foreign body. There was never pain in the nose or elsewhere, but several times small quantities of blood escaped from the left nostril, and although not much blood appeared at once, there was a continuous clear or blood-stained watery discharge. On examination the swelling is seen to be confined to the left side of the nose, and this growth, the patient states, commenced soon after he felt the nostril was obstructed, and since then it has gradually increased. He believes that the swelling has not become any greater during the last month. At the present time respiration through the right nostril is free, and nothing abnormal can be seen. The patient has never complained of any pain in the nose, but nearly every night suffers from frontal headache.

The tumor occupies the anterior half of the left nostril, and almost touches the septum. It is firmly attached to the inferior turbinated body by a broad base and has grown so as to cause considerable swelling of the face, and some displacement of the nasal bones. The tumor is of a pale, pink color, is irregularly nodulated on its mucous surface, and presents somewhat the appearance of coarse œdematous granulation tissue. When its surface is injured it bleeds freely. A small portion removed for microscopic examination presented the following structure.

Several sections of the tumor were examined, and they all presented very much the same structure. The great bulk of the growth was made up of tubes and cavities lined by cylindrical epithelium. In some parts the glandular structure was well preserved, and there was a distinct basement membrane. In other parts large spaces were seen, which were found to be packed full of irregularly shaped epithelial cells, but even in these spaces the cells next the stroma preserved to a considerable degree the cylindrical form.

The whole of the tumor was traversed by a well formed, but not very abundant fibrous stroma; so small in amount was the fibrous tissue, that, in some parts, it was with difficulty detected in unstained sections. From the microscopic characters of the tumor it was evident that we had to deal with an adeno-carcinoma, or what is called by some writers a cylinder-celled epithelioma, or malignant adenoma.

After examining the sections I assured the patient that little could be done for his relief, and that surgical interference would probably do harm rather than good, unless we could succeed in extirpating the entire tumor. I also told him that such an operation would be a formidable one He determined to return home to consider the matter. In the month of January, 1890, the patient was seen twice, and on his second visit (on the 21st) the tumor was observed to be increased in size, and he was recommended to come into the Hospital immediately, but he did not make his appearance again till March 31. Then he was very anxious to have an operation performed at once, but I was very reluctant to interfere with a malignant tumor the size and extent of which it was now not possible to determine.

At the operation, the extent to which the tumor spread showed that there was little hope of excising it entirely. Even although I removed the tumor very freely (as will be shown when the operations for malignant disease are described), first with the knife and afterward with Volkmann's spoons, and the thermocautere, still recurrence took place within a few weeks, and the patient died in less than three months thereafter, that is to say, about 16 months after the tumor was first observed by the patient himself, but probably the onset of the disease occurred at a more remote date.

CASE. II. *Myxo-carcinoma of right middle turbinated body of ten months duration, complete removal with recovery. No recurrence.*— The patient, J. K., æt. 61, a laborer, was admitted into the Glasgow Royal Infirmary, July 11, 1890, complaining of inability to breathe through the right nostril, which he observed for the first time ten months previously, but at that time the obstruction was attributed to a "cold in the head" There was little or no pain. On admission the right nostril is found to be almost completely occluded by a tumor originating from the middle turbinated body. But while the growth is observed to be in close contact with the septum, that structure is found not to be involved, as a probe can be easily passed between it and the inner surface of the tumor. The neoplasm is very irregular and nodulated, is highly vascular, and, on the slightest injury, bleeds freely. A small portion of the tumor was removed for diagnostic pur-

poses, by spoon-shaped forceps, which, when cutting through the growth, showed it to be of a hard brittle consistence; somewhat resembling frosted turnips.

On microscopic examination the tumor was found to be a myxo-carcinoma, and the sections presented the following structure. The great bulk of the tumor displayed the ordinary characteristics of a myxoma, but through small areas the changes about to be described were observed. The surface of the tumor was seen to be covered by squamous stratified epithelium, which, for the most part, was practically normal in appearance, but at several points on the surface of the section the epithelium was noticed to dip down into the deeper tissues, and was no longer limited by a basement membrane, but extended into, and was intimately mixed with, the other cells of the tumor. In some parts of the sections distinct nests, or laminated capsules, were discovered, while, in other portions, the epithelium lining the mucous ducts was found to have proliferated freely.

The character of the tumor being undoubtedly malignant, while it was still small in size, I advised the patient to have the growth removed as soon as possible, and, as I had to leave Glasgow for a few days, I asked my assistant, Dr. D. McKellar Dewar to operate by the same method as I had employed in removing the tumor from J. M. (Case I).

After extirpation, the growth was found to weigh one ounce. The patient made a good recovery, and, when seen last in December, 1890, there was no tendency to recurrence, and the wound had healed so well that the cicatrix was hardly seen unless on very close inspection.

CASE III. *Small round-celled sarcoma of left middle and superior turbinated bodies, repeated ana profuse hæmorrhage, checked occasionally by treatment. Severe pain, displacement and protrusion of eyeball; somnolence, death by coma, 16 months after onset of the disease.*—Mr. M., æt. 64, consulted me on the advice of Dr. Archd. Brown of Mount Florida, in May, 1887. The history given to me at the time by the patient was as follows: About three months ago he began to experience a difficulty in breathing through the left nostril, and at the same time the amount of discharge was noticed to be excessive, and occasionally tinged with blood. Since then, on several occasions, epistaxis has been severe and prolonged. The patient does not complain much of pain, but suffers considerably from interference with nasal respiration, and, when the hæmorrhage is severe, he feels very weak. The discharge also troubles him on account of its quantity and fœtid odor. Examination of the nostrils and posterior nares revealed the presence of a

small soft vascular tumor, growing from the posterior part of the superior turbinated body, together with considerable thickening of the mucous membrane of both nostrils. As the diagnosis in respect to the nature of the tumor was not clear at the time, palliative treatment was employed for the purpose of restraining the hæmorrhage, and if possible reducing the bulk of the mucous membrane, so that a more complete view might be got of the tumor.

During the early summer months (1887) the symptoms ameliorated, and the patient's general health improved somewhat, but, towards the end of August, whilst residing at Rothesay, a very severe attack of epistaxis occurred. So profuse was the hæmorrhage that the anterior and posterior nares required to be plugged, and for some days he was too weak to be removed to Glasgow. Early in September he called to see me; on examination I found that, while the condition of the mucous membrane had improved in appearance, the tumor had increased in bulk, and was even more vascular than formerly. The general condition of the patient was not such as to justify me in recommending a radical operation, even although such a procedure had been considered requisite, but, when it was also known that, from the situation of the tumor, complete removal was impracticable, the question of serious surgical interference was at once set aside. The only operation resorted to was to remove as much as possible of the tumor with the electric ecraseur, for the purpose of temporarily restraining the hæmorrhage. In this the operation was successful for the time being, but hæmorrhage recurred within a few weeks. The portion of the tumor removed was the size of a large walnut, and presented the following appearance: To the naked eye it was of a pale pink color, very soft and pulpy, its surface was irregular and frayed, not unlike the appearance presented by the chorion previous to the formation of a placenta. When hardened for a few days in spirits the growth shrank to about a fourth of its original size, and on microscopic examination exhibited the structure of a small round-celled sarcoma.

The subsequent history of the case was a very sad one. The hæmorrhages became more frequent and profuse, and latterly almost continuous; the patient's appetite gradually failed, and, suffering much from dyspepsia, steadily his strength diminished.

The following observations are taken from a letter I received from Dr. Archd. Brown. "After the last operation the hæmorrhages continued to occur at intervals; but in the course of time the patient began to suffer from other symptoms, due no doubt to the rapid growth of the tumor, severe neuralgic pains troubled him day and night, yield-

ing, only temporarily tn pnwerful sedatives. Obstruction to the lachrymal duct occurred, resulting in abscess. Latterly indications of displacement and protrusion of tbe eyeball were nbserved. This condition gradually increased until the patient's expression was totally altered. The general weakness was now very marked, induced partly by bleeding and by pain and sleeplessness. A few days before death the patient became somnolent, but nnt to any very pronounced degree, except as contrasted with his previous state. The somnolence, however suddenly passed into coma, which, after 24 hours, ended in death on May 2n, 1888," about 16 months after the onset of the symptoms.

CASE IV. *Round celled sarcoma of left middle turbinated body. Slow growth of tumor followed by rapid repeated copious hæmorrhages; ultimate involvement of the base of the skull and brain, ending in death from coma.*—The patient, T. W., æt. 46, was sent to me by Dr. William Snodgrass, of Partick, who furnished me with a very complete history of the case. From his report it appears that the patient "noticed in September, 1889, that occasionally fleshy looking masses came from the left nares on blowing his nose, unaccompanied by hæmorrhage to any extent, and not causing much pain. Soon after these masses began to come away regularly about once a week. The patient then consulted Dr. Miller, of Largs, who removed similar fleshy masses, and advised washing the nares with sea water. In February, 1890, had considerable anxiety from business, and other matters. The fleshy masses still continued to come away, and he continued washing the nares as directed by Dr. Miller. Toward the month of November, 1890, he began to experience a 'choky' sensation when eating, and had frequent slight attacks of epistaxis. He also suffered from headaches of a neuralgic kind, which occasionally lasted three or four days, and were sometimes relieved after an epistaxis, but not always. Mr. W. consulted me (Dr. Snodgrass) on Tuesday, December 2, 1890, regarding the above symptoms. The lower turbinated bone on the left side seemed to be enlarged and hyperæmic. I therefore advised the patient tn consult Dr. Newman, whom he saw for the first time on Thursday, December 4. He resumed work on the railway next day, and when he was engaged writing, about 9:40 P.M., he noticed that he had made a mistake in addressing a letter. He tore up the paper and wrote the name correctly on a fresh envelope, but this time be made a mistake in the first line of the address. He then tore up the second envelope, and on a tbird one he wrote the name and first line of address correctly, but made a mistake

in second line of the address. He then stopped work, and walked home about two miles, and he found, on entering the house, that he could not speak to his wife. I (Dr. Snodgrass) saw him about 11 P.M. He was then able to describe the occurrence in a perfectly connected manner. The pupils reacted normally to light. He had no pain in the head, but spoke of flashes of light in the left eye. He remained in bed till Monday, December 8. On that day he went for a short time to work, but on returning to the house he spoke of a feeling of cold in the right arm, leg, and on the same side of the body, although no difference in temperature between the two sides was appreciable by others. On December 25, he rose and felt fairly well, but toward evening his friends noticed that he began to talk incoherently, and I was called to see him. When I arrived I found that he was able to answer questions quite correctly, and seemed generally in a perfect state of consciousness. The pulse was low and regular, about 50 per minute; the pupils small, but re-acting normally and equally to light. The eyelids were slightly œdematous, as were also the cheeks, but there was no other trace of œdema about the body; he experienced no pain. He was somewhat pale, with brownish earthy tinge on face and neck; the breath had an odoi of stale vinegar; there was no excessive thirst nor hunger, but he was weaker than he used to be, although still fairly strong. Urine when examined showed no albumin, but oxalates of lime and a considerable amount of sugar were present. A slight degree of mental wandering was noticeable for several days. Previous to December 29, and on that day, the patient had an attack of epistaxis, in which about two teacupfuls of blood were said to have been lost. This was checked by the application of iced cloths to the forehead and the nose. It returned again, however, on Tuesday, 30, and was again checked by application of ice. It was noticed that he now became somewhat more intelligent. Pulse soft, slightly irregular; tremors of right hand were noticed; but no other sensory or motor disturbance, and he answered questions clearly. The epistaxis returned again on Wednesday, 31. On Thursday, January 1, 1891, the hæmorrhage was checked by use of injection, into nostril, of equal parts of tinct ferri perchlor. and water. On Friday, 2, epistaxis in considerable amount, and marked fœtor from nasal discharge. Pulse soft and irregular, 120 per minute; nares plugged with cotton wool impregnated with iodoform; incontinence of urine, and slight ptosis of right eye. He can open the eyelid about half way, but he cannot tell his right leg from his left; slight hæmorrhage on Saturday, January 3, and Sunday, January 4; incontinence of urine and fæces; considerable tremor in the

right arm; increased ptosis; no complaint of pain. He swallows liquids well, but he has had difficulty in swallowing solids, pulse irregular in force, and frequently, 115 to 125; temperature, 101°. On Monday, 5, only a trace of hæmorrhage from the nostril. The left nostril was now blocked by the growth; the patient answered most questions intelligently, and he could move his arms and legs, but the movement of right eyelid was still deficient; pupils small, but reacting to light; paresis of both hands; carphologia. He talks incoherently, but lies perfectly at rest in bed; incontinence of urine and fæces still present. The fæces were very liquid, and of a dark brownish color; temperature in the evening, 100 4°; pulse very irregular in force and frequency. Tuesday morning, temperature, 100 2°, pulse, 120; any attempt to open the right eye was resisted, but he moved both hands and feet; marked paresis, with tremor of hands, and signs of nausea when given food. This passed off during the day. Evening temperature, 101 2°. Wednesday, January 7, morning pulse, 140; temperature, 100°; respiration, 35; tremors more marked; now his attention cannot be aroused. Evening pulse too irregular and weak to be counted; temperature, 102.2°; respiration, 40.

"Patient died at 2:15 A.M. on Thursday, January 8, in a state of coma."

When I (Dr. Newman) saw the patient for the first time on December 4, 1890, little could be made out on account of the presence of blood clot, which, with the swelling, completely blocked the left nostril. After washing the nostril as well as possible, a bleeding point was seen at the lower extremity of a diffuse swelling, which filled almost the entire nares. The surface was smooth and entirely covered, as far as could be seen, by healthy or slightly hyperæmic mucous membrane, and it looked altogether like a great hypertrophy of the middle turbinated body. I touched the bleeding point with the electric cautery, and sent the patient home. I did not then suspect the existence of malignant disease, but at the next visit (December 11), from what the patient told me, and from the appearance of the growth, which had now fungated, it was very evident that the disease was sarcoma.

This case illustrates well the difficulty in diagnosis of sarcoma, and shows how closely it may resemble, even at a late stage of the disease, simple hypertrophy of the turbinated bodies.

CASE V. *Round celled sarcoma of septum; duration seven or eight weeks; sudden formation and rapid growth; complete removal with cure.*—The patient, a woman, æt. 29, was admitted into the Glasgow Royal Infirmary, March 19, 1890, complaining of obstruction in the

right nostril, accompanied by constant dull aching pain, and slight nasal discharge. The patient stated that she could breathe quite freely through the right nostril, until seven weeks previous to admission, when she suffered from what she believed to be "a cold in the head," but she noticed at the same time that the obstruction was daily becoming greater. On examining her nose, she observed a whitish-looking mass which blocked the nostril, and this growth she said increased in size very quickly, so that on admission, three weeks after, the tumor was first noticed, the right nostril was not only blocked, but the swelling had caused considerable bulging of the external parts. For the last three weeks there was considerable pain occasioned by the pressure of the growth. It was not, however, continuous, but rather intermittent in character. She also suffered from a continuous aching pain in the forehead, which she distinguished distinctly from the pain just referred to. On examination a pale, smooth, firm tumor is observed on the right side of the septum, to which it is attached by a broad base. The growth is in form and size that of a half of a large walnut. The rounded portion presses firmly against the turbinated bodies, and externally there is a good deal of bulging. The examination caused a small quantity of blood to escape, but the patient says that on no other occasion has she noticed the discharge tinged with blood. I was very doubtful respecting the nature of the tumor, and therefore removed a small portion of it for microscopic examination, which showed it to be a round and spindle-celled sarcoma. I, therefore, by reflecting the right side of the nose, exposed the tumor freely, and removed it completely, the base of the growth being subsequently cauterized. Now (February, 1891), the patient is perfectly well, and no evidence of an operation having been performed is seen even on critical examination.

The five cases above recorded illustrate very well some of the varieties of malignant disease of the nasal fossæ, and show, when an operation is resorted to early in the course of the disease, a cure may be effected. Whereas, when the disease is advanced, or of a very malignant type, surgical interference is of little or no avail. A point worthy of note is that malignant and benign neoplasms may often co-exist in the same individual. Voltolini, Hopmann, Schæffer, Terrier and Ricard have recorded instances where the two varieties of tumor have been associated. My fourth case is, no doubt, an exam-

ple of this. It is necessary to bear in mind that it is not always right to conclude that because a benign growth has been removed from the nostrils, and proved to be such by a microscopic examination, that, therefore, other growths occuring in the same individual are also benign. In the earlier surgical writings of this century very little attention was paid to primary malignant disease of the nasal fossæ, and no clear distinction was drawn between the two great divisions of malignant neoplasm, the carcinomata and the sarcomata. The writers, at that time, clearly distinguished, however, a form of disease in which they considered it inadvisable to operate, on account of the danger of doing harm rather than good to the patient. The earliest recorded case, if we exclude the vague and unsatisfactory records of antiquity, is one published by Jonne Babtista Palletta in his "Exercitationes Pathologicæ, Mediolani," 1820, and another by M. Gerdy in the "Traite des Polypes," published by him in Paris in 1833. In the absence of a microscopic examination of the tumor, it is very difficult to ascertain their precise nature, as the descriptions given are equally applicable to different forms of malignant disease. In examining the literature of the subject, the bibliography of which is appended to this paper, these and other cases of a doubtful nature will be omitted. The term "cancer" has been so frequently been used as equivalent to "malignant" that only by careful inquiry into each case is it possible to form a reliable opinion, many of the published cases of malignant disease not being histologically carcinomatous although called so. Within very recent times, however, a sufficient number of cases of primary malignant disease of the nasal fossæ have been recorded to afford us ample material for making an accurate classification, and of drawing general conclusions respecting the symptomatology, diagnosis, prognosis and treatment of the diseases at present under consideration. The most common variety of malignant disease are the round, or the spindle-celled sarcomata, but while these are the most common, sarcomata may occur in great variety, and present considerable diversity in their life history and naked eye appearance. Some, namely, the small round-celled sarcoma, are of very rapid growth, and are composed of soft, highly vascular

tissue, which on microscopic examination, is found to be composed almost entirely of round-celled embryonic connective tissue. Between this type of growth and the hard, firm fibro-sarcoma there are many gradations, just as is found in tumors occurring in other parts of the body. Therefore, it is not always easy to draw a clear line of distinction between them; indeed, in many instances different portions of the same growth present a remarkable diversity in their histological structure, the older portions, as a rule, being more fibrous or more highly developed than the newer parts; and, when recurrence occurs, after extirpation of the primary tumor, the secondary formations are generally of more rapid growth and lower in type of development than the portions first removed. From an inquiry into the literature of the subject, it has been found that the most common malignant disease of the nasal fossæ are the round, and the round and spindle-celled sarcomata. We do not here refer to growths originating in the naso-pharynx, or commencing in the bones of the face, and extending thereafter into the cavities of the nose. It is only where the tumors originate in the nasal fossæ. Of these cases a few examples of melanotic and pigmented sarcomata have been recorded by Heymann, Lincoln and Viennois, while single cases of myelo-sarcoma, glio-sarcoma and alveolar sarcoma have been seen by Mason, Weber, and Fowler, respectively. On looking over the collected cases, it is observed that while these tumors may arise from any part of the nasal fossæ, there are certain sites selected more frequently than others. The septum and upper turbinated bodies are particularly liable to attack. In the former situation the neoplasm by perforating the cartilage, or by involving it in the tumor mass, may extend into both nostrils. When the growth develops rapidly and is round-celled in structure, it may be mistaken for an abscess, or a soft syphilitic growth, and when hard and composed of spindle-celled tissue, it may resemble an enchondroma.

It is stated by Dr. A. F. Plicque, "A polypus inserted on the septum must, in fact, always be regarded as of malignant nature."[1] Surely this is not so. I have removed fibromata and

[1]Annales des Mal du Larynx. March, 1890.

myxomatous tumors, which were clearly attached to the septum, and where, during the course of the case, no suspicion was raised of malignancy, either by the clinical history, by the microscopic appearance, or by the subsequent course of events.

The round-celled sarcomata are not necessarily of rapid growth. In many instances, as in the cases above recorded, the size of the tumor may increase slowly at first, but in the end, either as a consequence of injury or operative interference, they may soon fill up both nasal fossæ, and extend to the cavity of the skull by invading the ethmoid and sphenoid bones. In a case recorded by Dunlay a tumor existed on both sides of the septum, the cartilage being perforated by the growth. It was soft and fluctuant, of a reddish white color, and fluctuation could be detected by placing a finger in each nostril. The tumor was mistaken for an abscess, and incised, but no pus escaped, and shortly after, the neoplasm invaded the whole cavity of the nose, and the patient died. This, and a few similar cases, illustrates very well the great difficulties attending the diagnosis of soft round-celled sarcomata, not only in the nasal cavity, but in all parts of the body.

The indications of malignancy, namely, rapid growth of the tumor, pain, frequent and copious hæmorrhage, and the appearance of the parts, together with the general constitutional symptoms and aspect of the patient, are not always present. Many eminent surgeons have been led astray by these characteristics being entirely absent. This is most notably observed when benign growths occur side by side with malignant new formations. As a rule, but there are exceptions, malignant growths are sessile, whereas the majority of benign tumors of the nasal fossæ are pedunculated.

When the former class of neoplasms have become diffused, that is to say when they have passed beyond the range of operative interference, the diagnosis is generally easy, and the features of the case only too clearly indicate the probable course of events. In such cases the question: Should a radical and sometimes formidable operation be resorted to, or should we be satisfied by adopting palliative measures? is seldom raised, unless the patient, as in my first case, demands an

operation to be performed, even against the advice of the surgeon.

Passing from the sarcomatous tumors, a few remarks may be made regarding the carcinomata.

Primary carcinomata of the nasal fossæ are seldom met with in practice, and very few examples have been recorded. Many of the tumors, designated "cancerous," probably on account of the symptoms associated with them, have, on more careful inquiry, proved to be fibromata of the naso-pharynx. In the early stage of malignant disease of the nasal fossæ, it is, in many instances, not only impossible to say whether the tumor is a carcinoma or a sarcoma, but it is difficult to pronounce the affection to be malignant or benign. In the first instance the malignant growth may present the same aspect externally, the same coloration, consistence, pedunculated form, and give rise to the same kind of discharge, as an ordinary mucous polypus. The malignant growths have, as a rule, a greater tendency to undergo degenerative changes than the benign new formations, and, not uncommonly, even before the local condition raises any suspicion as to the nature of the disease, alteration in the general health may lead one to fear the presence of something more than a simple polypus.

By far the most common variety of carcinoma met with in the nasal fossæ is the epithelioma. Stated roughly it may be said that two-thirds of these tumors are epitheliomata, while the majority of the remaining third are adeno-carcinomata.

In any case where the appearance of the tumor raises a suspicion as to its nature, a careful microscopic examination should be made of all parts of the growth, *not of one portion only.*

To distinguish between carcinomata and sarcomata, during the early stage of the disease, is not always easy without the removal of the tumor, or a portion of it. As a rule the sarcomata, unless the spindle-celled, give rise to more profuse, and more often repeated hæmorrhages than the carcinomata. Indeed, in cases of the first mentioned disease, the slightest manipulation may occasion severe bleeding, which is frequently difficult to stop. Again, I think I may say that during the early course of the disease, pain is not complained of to the

same extent in cases of cancer as in those of sarcoma.

When once the disease has made much progress, there is unfortunately little doubt as to its nature. Symptoms, such as severe pain, repeated and profuse hæmorrhage, and suppuration may be doubtless the result of such tumors, as the osteomata, fibromata or soft papillomata, but these growths do not increase rapidly in bulk, nor do they ulcerate or give rise to cachexia and involvement of the lymphatic glands, as observed so frequently in malignant disease.

When the nature of the tumor has been ascertained the next question which presents itself is, What is the site of origin of the tumor, and what is its relationship to other parts? It is desirable that these inquiries be answered, if possible, before the surgeon determines what course of treatment should be adopted.

In a few instances, and these only when the patient was under observation during the early course of the disease, the point from which the growth originally sprang has been ascertained; in the great majority of cases recorded, the patient has sought the aid of the surgeon at a time when the tumor had so greatly increased in bulk that the most skillful anterior and posterior rhinoscopic examination failed to reveal the original location or nature of the attachment of the neoplasm.

In such cases it is only after an operation has been performed for the removal of the disease that the relationship of parts is made out. This was so in my first case; in the others the point of origin of the disease was easily ascertained.

When tumors occupy the nares the relationship which they bear to other important structures must be kept in view. For example in my third and fourth cases, the upper parts of the nostrils were involved, in the former the middle and superior turbinated bodies, in the latter the middle turbinated only, as far as could be made out. In both of these instances it was abundantly evident from the history of the case that the growth penetrated the skull and gave rise to the serious cerebral complications, from which the patients died. When the disease involves the upper part of the nares, anything in the way of a radical operation is impossible, and even attempts at partial removal of the disease are contra-indicated, as evil

rather than good is likely to result from such interference, not only by causing a more rapid extension of the tumor, but also by inducing meningitis. When any operation is contemplated upon growths in the situation indicated, it is advisable to pay special attention to cerebral symptoms. The importance of attending to this is well illustrated in my fourth case, where shortly after I first saw the patient, he developed such a train of symptoms pointing to cerebral involvement, viz.: temporary aphasia, inability to write correctly, flashes of light in the left eye, and paresis of right arm and leg, that I not even for a moment contemplated a radical operation.

In the third case it was also evident that any attempt at complete removal of the tumor must only end in failure the question therefore of serious surgical interference was set aside, and the only operation resorted to was removal of very vascular portions of the growth by the electric ecraseur for the purpose of temporarily restraining the hæmorrhage.

In regard to treatment, the cases of malignant disease of the nares may be divided into two classes, (1st), those in which some hope may be entertained of completely removing the diseased parts as in cases 1, 2 and 3, and (2d), those in which operative interference can only do harm.

Even when the disease appears to be limited in extent a preliminary operation for the purpose of gaining free access to the nostrils is necessary. It is not advisable to trust to the simpler but less effectual methods of removal by the snare electric-cautery, loop, or forceps. If anything is to be done it must involve complete removal. Excision of small portions of a tumor may be justifiable for diagnostic purposes, but, when the disease is known to be malignant, other circumstances being favorable, the sooner a radical operation is performed the better. Elsewhere I have drawn attention to the danger of inducing rapid dissemination of cancer by partial removal of the tumor.[1]

It is not necessary for me to describe, or to discuss the respective merits of the numerous methods which have been proposed by different surgeons, as they include all possible

[1]Clinical Society of London Trans., vol. xxii, p. 104.

methods of turning aside the external parts for the purpose of gaining access to the interior of the nares. Indeed in dealing with malignant disease in this region the operator must be guided not so much by what he knows of the case previous to operating as by what he sees during the operation. The performance of a certain operation, as described by another surgeon, may be on the one hand unnecessarily severe, and on the other inadequate, according to the requirements of the individual case.

In cases one and two the same operation was performed. A free incision was made along the naso-genial furrow; the subseptum, the cartilaginous septum were divided, and the soft parts reflected upwards. The posterior nares were plugged, so as to prevent the passage of blood into the larynx, and in both instances the growths were freely removed by scissors, Volkmann's spoons, chisel and cautery, with the endeavor of carrying the section beyond the diseased and into the healthy parts. In case one, the hæmorrhage was very severe, and even after removal of the turbinated bones and a large part of the left superior maxilla, it was found impossible to get all the disease removed. The cavity, which was of very considerable size, was carefully packed with long strips of iodoform gauze and the ends allowed to protrude from the anterior nares. The hæmorrhage was thus easily checked, and the external parts were brought into their normal position. In the second case, the tumor was limited to the mucous membrane of the middle turbinated body, but notwithstanding this limitation, the growth was removed *en bloc* along with a considerable mass of surrounding healthy tissue, while the base of attachment was cauterized, and the result as has been seen is most satisfactory. No recurrence has taken place within seven months of the operation. Usually, if the tumor is incompletely removed, it reappears within a few weeks at the latest.

The last case recorded (No. 5) required a less formidable operation, on account of the growth being small in size, and situated at the anterior part of the septum. In this instance only the right side of the nose was reflected by making an incision in the right naso-genial furrow, and across the upper lip, a little to the left of the septum. The space given by this

incision was quite sufficient for complete and easy removal of the tumor, first by scissors and Volkmann's spoon, and afterward by the free application of the cautery

One or two observations may now be made regarding the special dangers attending operations upon the nasal fossæ. One of the most serious dangers is hæmorrhage, especially when the tumor is of large size. The passage of blood from the nares into the larynx and trachea has also led, in a few instances, to bronchial and pulmonary complications, while infective diseases such as septicæmia, erysipelas, and acute meningitis have been responsible for a few deaths.

In endeavoring to check hæmorrhage the surgeon is compelled to employ either tampons, or to plug the nares with antiseptic dressings. But on account of the offensive discharge, and the septic conditions previous to the operation it is not possible to keep the exudations sweet for any length of time.

A method I employed in operating upon a large soft ulcerating fibroma answered very well. A week previous to the removal of the tumor in the nose, I performed tracheotomy. After the patient was anæsthetized a large sponge was placed in the posterior nares and pharynx so that, while chloroform was administered by the tracheal tube, no blood passed into the mouth or trachea. Ollier's operation was then performed, and the tumor completely removed, after which very profuse hæmorrhage occurred, but was soon checked by douching the nares with carbolic solution at 180° F. (1-40 of water). When the operation was completed, the sponge was removed from the posterior nares, and a clean one inserted, so as to completely shut off the nares from the mouth. The tracheal tube was retained for a week, the patient was fed by means of an œsophageal tube, and the nares were douched freely three times a day, with an antiseptic solution. By this means, even although the discharge was most offensive previous to operating, the wound was kept quite sweet.

The statistics of nasal operations for malignant disease are far from satisfactory, for in the large majority of instances the operators have published the cases at too early a date, and have failed also at a later stage to give the ultimate result.

Of course where the operation has failed to remove the disease entirely, the course of the case can be easily surmised, but in those examples where the surgeon has assured himself that he has excised the whole tumor, surely it is his duty to let the ultimate as well as the immediate result be known.

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